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r RMSE

RMSE

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(Elshorbaghy *et al.*, 2000)

(Mahdavi, 1998)

(Abbasizadeh, 2004)

(Kerem Cigizoglu, 2004) .

(Dawson *et al.*, 2006)

(Memari *et al.*, 2008)

(Akbarpour & Hamedeftekhar, 2007)

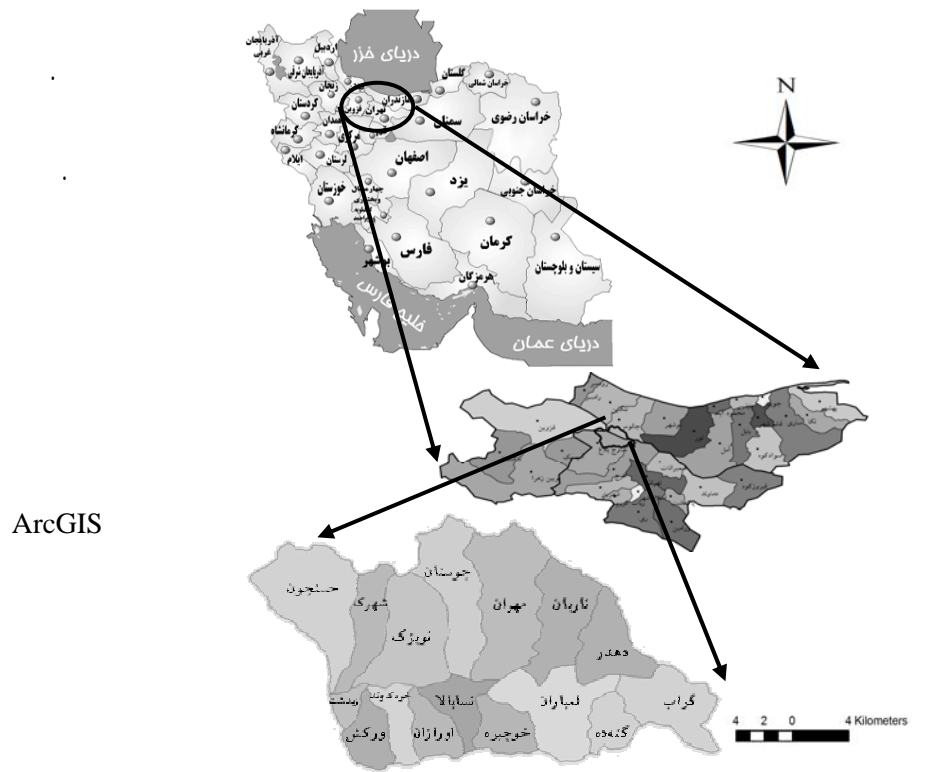
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(Hassanpour Kashani *et al.*, 2007)

(ANN)

(Reigz, 1982) .

(Karunaithi, 1994) .



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- : $Q_n = 1.51(Q_{n-1})^{.79}$
- : $Q_n = 1.74(Q_{n-1})^{.63}(t)^{.13}$
- : $Q_n = 1.38(Q_{n-1})^{.72}(pn)^{.13}$
- : $Q_n = 1.25(Q_{n-1})^{.65}(pn)^{.23}(t)^{.15}$
- : $Q_n = 1.07(Q_{n-1})^{.54}(t)^{.27}(pn)^{.29}$

(Deo &
Hassanpour Kashani *et al.*) Thirumalayah, 2000 &
al. 2007

MATLAB

(r) (RMSE)
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Qn-1
Qn-1, Pn
Qn-1, Pn , Pn-1
Qn-1, Pn , Pn-1, Pt-5
Qn-1, Pn , Pn-1, Pt-5, t
Qn-1, Pn , Ps
Qn-1, Pn , Ps, t

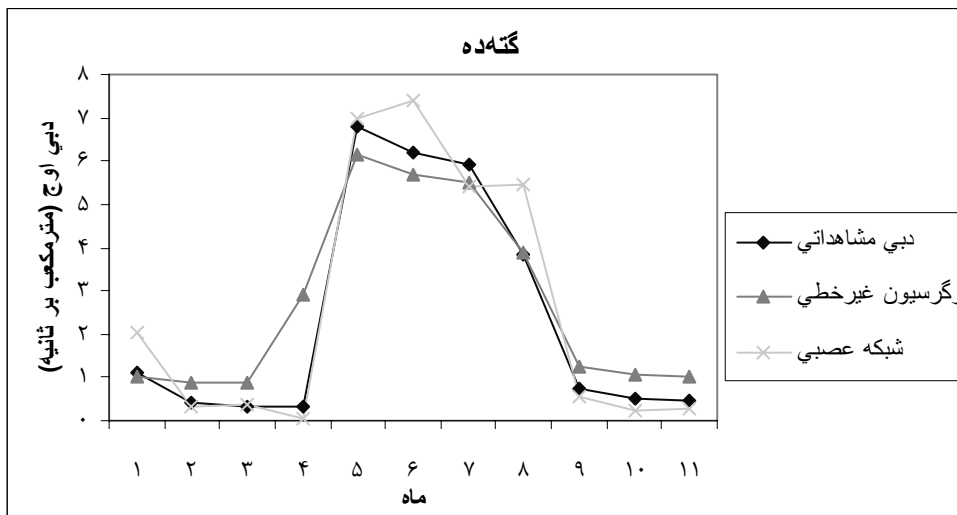
Pn Qn-1*
Pt-5 Pn-1
t Ps

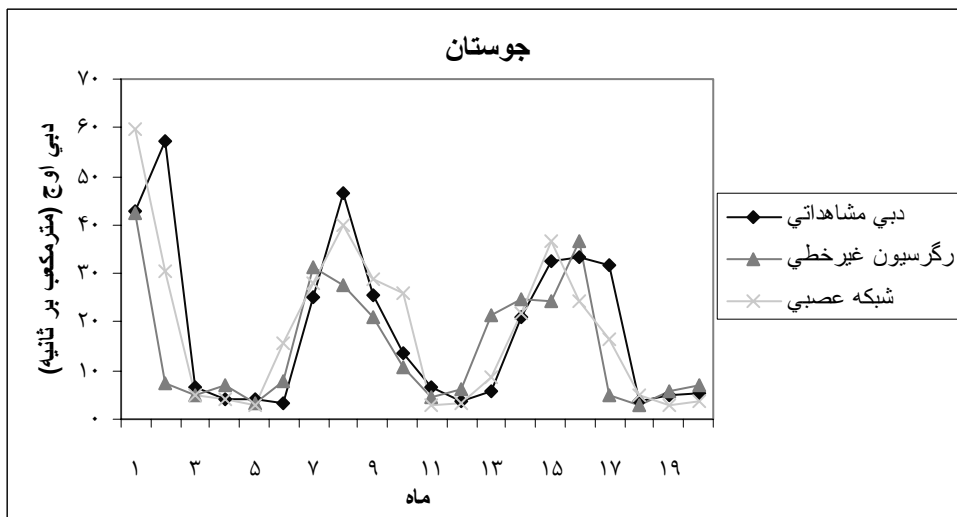
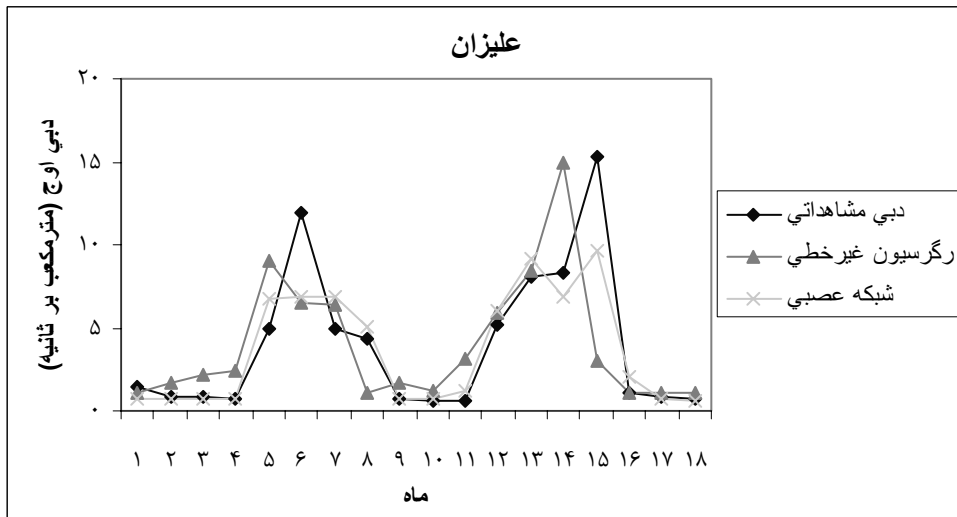
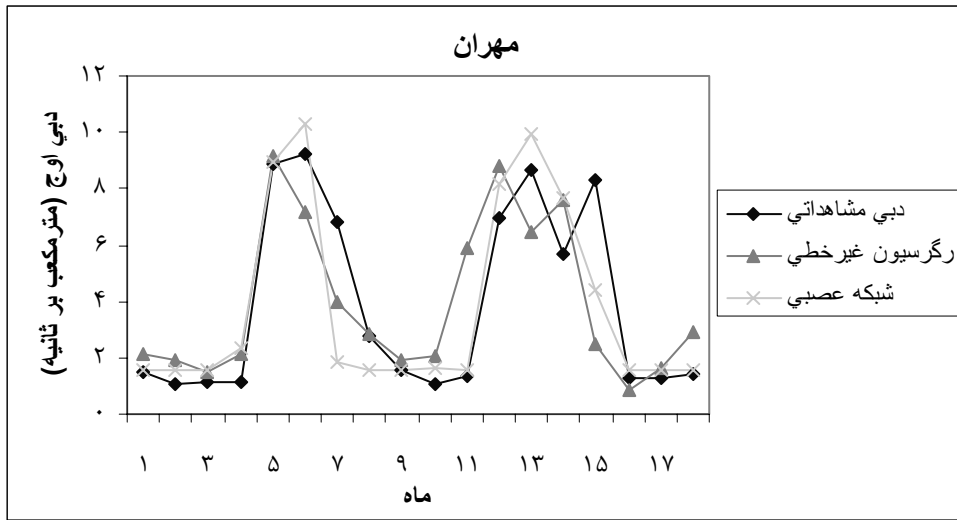
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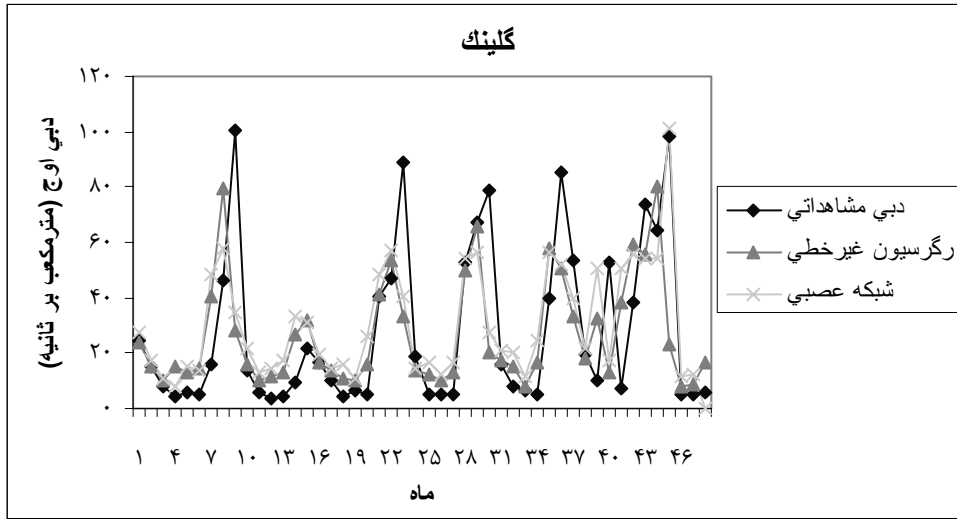
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r RMSE

(Karunaiti, 1994).

(Elshorbaghy *et al.*, 2000).

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Flood Forecasting Using Artificial Neural Networks and Nonlinear Multivariate Regression (Case Study: Taleghan Watershed)

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Abstract

It is necessary to use empirical models for estimating of instantaneous peak discharge because of deficit of gauging stations in the country. Hence, at present study, two models including Artificial Neural Networks and nonlinear multivariate regression were used to predict peak discharge in Taleghan watershed. Maximum daily mean discharge and corresponding daily rainfall, one day antecedent and five days antecedent rainfall, sum of five days antecedent rainfall and monthly mean temperature were extracted in Gatehdeh, Mehran, Alizan, Joestan and Gelinak hydrological units and entered into neural network model (from upstream to downstream, respectively). The feed forward network was used with one hidden layer and back-propagation algorithm. Then, the models were trained, validated and tested in three stages. The observed and estimated peak discharges of the models were compared based on RMSE and r. The results showed that neural network has better performance than nonlinear multivariate regression.

Keywords: Neural network, Peak discharge, Taleghan, Nonlinear multivariate regression, RMSE, Model